

What is Claimed is:

1. A process for the production of a gas diffusion electrode, suitable for use in electrolysis of an aqueous solution of hydrogen chloride, comprising:
 - a) spraying a dispersion comprising a noble metal catalyst and a proton-conducting ionomer in an organic solvent onto an electrically conductive support, said support optionally being provided with a coating comprising an acetylene black/polytetrafluoroethylene mixture and
 - b) removing the organic solvent.
2. A process according to Claim 1, wherein said catalyst comprises a compound of the formula $\text{MeI}_x\text{MeII}_{(6-x)}\text{E}_8$, wherein MeI is molybdenum, MeII is ruthenium, platinum, rhenium, rhodium or palladium, E is sulphur, selenium or chlorine and x is from 0 to 6.
3. A process according to Claim 1, wherein said catalyst comprises a platinum-ruthenium alloy.
4. A process according to Claims 1, further comprising

- c) spraying a second dispersion comprising proton-conducting ionomer in an organic solvent and
 - d) removing said organic solvent.
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- 5. A process according to Claim 1, wherein as a result of said spraying of the dispersion according to a) and removing the solvent according to b), the electrically conductive support is loaded from 0.5 g/m² to 10 g/m², based on the noble metal of the catalyst.
 - 6. A process according to Claim 1, wherein said electrically conductive support has a high specific surface area.
 - 7. A process according to claim 1, wherein said support comprises carbon black.
 - 8. A process according to Claim 6, wherein the ratio of the mass of the catalyst to the mass of the proton-conducting ionomer is from 1:1 to 15:1.
 - 9. A process according to claim 8, wherein said ratio is 3:1 to 6:1.

10. A process according of Claim 1, wherein the electrically conductive support comprises a woven fabric, braid, net and/or nonwoven materials comprising carbon, metal and/or sintered metal.
11. A process according to Claim 1, wherein said dispersion and/or said second dispersion comprises a dispersion of Nafion[®] in alcohol.
12. A process according to Claim 1, wherein the dispersion according to steps a) and b) is sprayed on at least two times, and/or the second dispersion according to step c) and d) is sprayed on at least two times.
13. A gas diffusion electrode obtained by a process according to Claim 1.
14. A process for the production of a gas diffusion electrode, suitable for use in electrolysis of an aqueous solution of hydrogen chloride, comprising:
 - a) spraying a dispersion comprising a noble metal catalyst and a proton-conducting ionomer in an organic solvent to form a gas diffusion electrode, and
 - b) removing the organic solvent.
15. A gas diffusion electrode prepared according to a process of claim 14.
16. A process according to claim 14 wherein said spraying and removing are conducted at least two times each.

17. A process according to claim 14, wherein after removing said organic solvent, a second dispersion that is the same or different than said dispersion is sprayed onto said support.
18. An electrode prepared according to a process of claim 17.
19. A gas diffusion electrode that has been prepared by spraying and drying catalyst on a support and wherein sintering is not employed in the preparation thereof.
20. A gas diffusion electrode according to claim 19, wherein said electrode is loaded with from 0.5 to 10g/m² of said catalyst.
21. A gas diffusion electrode according to claim 19, wherein said catalyst is a noble metal catalyst.